

**Testimony of
Dr. Michael D. Dykes, DVM
Vice President, Government Affairs
Monsanto Company
Headquartered in St. Louis, Missouri
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House Committee on Agriculture
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Mr. Chairman, Members of the Committee, my name is Michael Dykes, and I am Vice President of Government Affairs for Monsanto Company. I appreciate this opportunity to meet with you today. Thank you for holding this hearing and your continued support of biotechnology. I am also grateful to the Department of Agriculture, the Environmental Protection Agency and the Food and Drug Administration for their oversight and commitment to the products of biotechnology.

I would like to begin by giving you some background about Monsanto and our business. Monsanto, based in St. Louis, Missouri, is an American company of nearly 14,000 people dedicated to making a positive difference in agriculture in the United States and around the world.

Our vision is – “abundant food and a healthy environment.” We are working to deliver products and solutions that help to meet the world’s growing food needs, while conserving natural resources and protecting the environment.

Monsanto has a long history of turning innovative science into successful, high-value products that improve the efficiency of crop and animal agriculture. Biotechnology is an example of our commitment to agricultural innovation. We developed Roundup Ready seeds that have been genetically enhanced to provide herbicide tolerance thereby allowing Roundup herbicide to be applied directly over the top of the crop in the field. This provides outstanding weed control without damaging the crop.

We have also developed Bollgard cotton and YieldGard corn, which helps control the major insect pests in those crops and reduces the use of chemical insecticides. Our biotechnology products have enjoyed outstanding acceptance by growers in the United States and other countries. Because of the success of our first biotech crops, we are able to reinvest in biotechnology and conventional plant breeding research. We spend approximately \$1.4 million a day on research and development of new technologies to improve agriculture and food quality. Farmers, the environment and society in general have and will continue to benefit from these new products through dramatic reductions in pesticide use, significant increases in yield, better soil and water quality, enhanced food/feed quality and improved grower profitability.

Demand for biotechnology products

As I mentioned, our products have been widely adopted by U.S. farmers and other producers around the world and grower adoption continues to expand. Our first biotech crop, Roundup Ready soybeans, was introduced in 1996 and planted on less than 2 percent of U.S. soybean acres that year. In 2004, USDA estimates that biotech soybeans were planted on 85 percent of all soybean acres in the United States.

For cotton growers, we developed Roundup Ready cotton, Bollgard insect-protected cotton and the combination of these traits. The first cotton products were introduced in 1996 and were planted on approximately 13 percent of U.S. cotton acres. This year, biotech cotton traits were used on 76 percent of all U.S. cotton acres.

There is a similar success story for biotech traits in corn. This year, biotech corn was planted on 46 percent of U.S. corn acres, up from the 3 percent adoption rate in 1997, the introductory year. U.S. corn growers are planting a number of corn varieties containing Monsanto traits including Roundup Ready corn, YieldGard corn (which is protected against European corn borer), YieldGard Rootworm corn (which is protected against corn rootworm, the major pest in corn) as well as corn varieties containing combinations of

these traits. Next year, we anticipate the availability of Yieldgard Plus, a corn variety that “stacks” the traits to protect against both the corn borer and rootworm. This will be especially helpful to farmers in parts of the country that have significant populations of both pests. In addition, we expect a corn product that will not only protect against both pests, but also be tolerant of Roundup.

In the last five years, the amount of biotech acreage for each crop – corn, cotton and soybeans – has more than doubled. We currently license our technology to 219 corn and 259 soybean seed businesses.

International adoption

Internationally, the acreage planted with biotech crops increased by at least 15 percent in 2003 — the seventh straight year that global farmers have adopted biotech crops at a double-digit pace. Around the world, 167.2 million acres in 18 countries were planted with biotech crops last year. Since the introduction of biotechnology in 1996, there has been a 40-fold increase in planted acreage. Almost one-third of the global biotech crop acreage was in developing countries — up from 25 percent in 2002. An estimated 7 million farmers grew biotech crops in 2003, of which an estimated 6 million were in developing countries. An estimated 55 percent of the soybeans grown worldwide were biotech soybeans, with 21 percent of the cotton, 16 percent of canola and 11 percent of the corn grown globally with biotech traits.

Benefits for U.S. farmers

Although biotechnology conveys benefits around the world, by far, the largest biotech acreage is in the United States and U.S. farmers reap most of the benefits.

Consider these facts:

- In 2002, the National Center for Food and Agricultural Policy found that eight biotech crops in use by U.S. farmers were delivering major annual benefits: \$1.2 billion dollars in reduced costs, 4 billion pounds of increased yield and a 46 million pound reduction in pesticide use.
- Biotech soybeans and corn have contributed much of that benefit, not only in cost savings and reduction in herbicide applications, but also in soil conservation and stream protection. Biotech crops facilitate the practice of conservation tillage, allowing farmers to control weeds without plowing their fields. This keeps sediment out of streams and reduces fuel consumption as growers make fewer trips across their fields. An American Soybean Association grower survey found that the introduction of biotech soybeans was the single largest factor in growers' decision to switch to conservation tillage.
- These biotech cotton and corn products have contributed to major reductions in insecticide use. The National Center study calculated that biotech cotton reduced 1.8 million pounds of chemical insecticides each year. This study predicted that rootworm resistant corn, which we introduced in 2003, could replace 14 million pounds of pesticides each year.

Future benefits beyond the farm

By protecting soil, reducing pesticide use and saving fuel, biotechnology is benefiting farmers and the environment. A number of products in our development pipeline can bring benefits to consumers and society at large.

Working in collaboration with several smaller companies, we have identified and begun testing genes that control stress responses in plants, with the hope of improving the tolerance of crops to drought. Water is the most limiting resource for agriculture in many

parts of the world. Drought stress during critical parts of the growth season cause enormous losses of food and fiber virtually everywhere on Earth, including here in the U.S. In some global regions, the problem is critical.

Early results have been exciting. These photographs show a comparison of un-improved plants next to plants containing an experimental drought stress tolerance gene.

We have seen results like this in soybeans, rice and corn. This last chart shows corn that was field-tested last year with drought stress during growing season. Plants improved with the experimental drought stress tolerance gene show observably better protection from wilting during the drought and a bigger harvest at the end of the season.

These positive results are early indicators that genes can be discovered and developed to protect crops from drought stress, delivering a bigger harvest. Much work remains before useable products can be ready, but we are working to bring these benefits to farmers.

For the consumers, we are developing oil seeds that provide health benefits – by providing improving flavor while reducing or eliminating trans fats. By 2006, we expect to have these oil products commercially available. By 2008, the next generation of oil products will be providing oils that are more stable and stay fresher longer on our pantry shelves.

For instance, Omega 3, a fatty acid, is the component that makes a seafood diet so heart healthy. We are looking at ways to use plants to produce Omega 3, giving consumers the ability to consume more Omega 3's in the foods they eat every day. We also are developing a soybean that will produce heart-healthier oils.

On another front, we are using biotechnology and conventional breeding to develop corn that is ideal for production of ethanol. This corn, high in fermentable starch, could make ethanol production more cost-efficient and help address the ever-increasing concern about oil production and gasoline prices.

These are not just concepts anymore, they are real corn and soybean plants that we can expect to see in farmers' fields near the end of this decade.

Humanitarian benefits

Micronutrient deficiencies, especially those of vitamin A, iron and zinc, remain a large problem for several populations, particularly women of childbearing age and young children. Monsanto has worked with an international consortium of partners including The Bill and Melinda Gates Foundation, USAID, and the Asian Development Bank, to help address malnutrition issues in a new program called, "Harvest Plus". Monsanto donated critical corn genomic information to aid in the development of a nutritionally enhanced African variety of maize with increased levels of vitamin A. We are hopeful this information will help researchers successfully develop vitamin A maize that would be another tool to help alleviate vitamin A deficiency.

In 2003, Monsanto and the other technology providers worked with the African Agricultural Technology Foundation (AATF) whose mission is food security and poverty reduction. This Foundation in partnership with the Rockefeller Foundation and USAID provides resource-poor farmers with the potential technological solutions for sustaining agricultural production. One of the goals of AATF is to find solutions to the complex intellectual property arrangements that often hamper plant biotech research and development in Africa.

In addition, Monsanto is working throughout the international community to donate technology to benefit developing countries. We have donated our database of the rice genome so that researchers around the world can improve this food staple for billions of people. We also have trained scientists from developing countries and shared technology that might someday help to protect cassava or sweet potato against devastating viruses or increase vitamin A content of staple foods to help fight childhood blindness that is rampant in developing countries.

Conclusion

In conclusion, we are looking for new solutions to problems that have challenged farmers and society for thousands of years. We're finding those solutions in nature – through biology and biotechnology.

And, the potential is great. Biotechnology today is where the computer industry was in the 1950s. The coming decades are poised to bring us biotech products as revolutionary and important to us as computers are today. As scientists continue to make technological breakthroughs, we will see the truly revolutionary products that have captivated scientific discussions for decades.

Innovation has been a priority for U.S. farmers for centuries. The result is American growers are at the leading edge of important new breakthroughs – things like biotechnology, precision farming and modern planting and harvesting equipment – that are reshaping the global agricultural environment.

We believe very strongly that agricultural innovation and creativity is the pathway for U.S. agriculture to continue to compete successfully in the global marketplace and for the benefits of technology to multiply for farmers, consumers and the environment. We believe, as society begins to fully understand the untapped potential of this technology, that there will be an exciting future for biotechnology – one that Monsanto is very proud to be a part of that future.

Thank you.